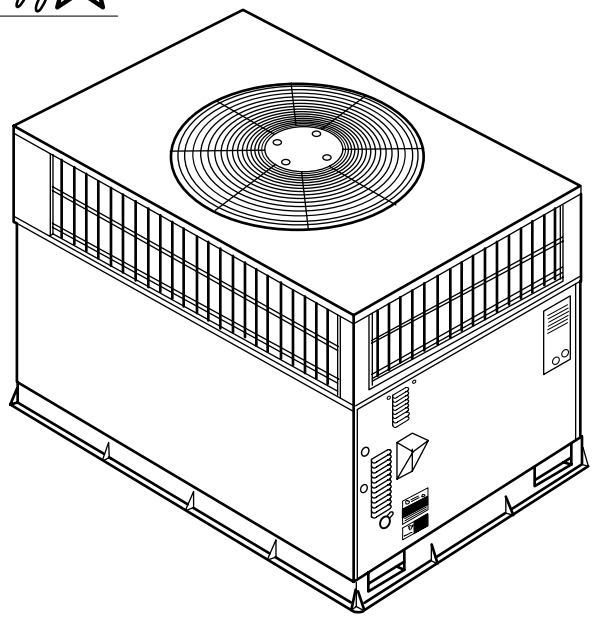
bryant
Heating & Cooling Systems

SINGLE-PACKAGED GAS HEATING/ELECTRIC COOLING UNITS

Model 583A
Sizes 024-060
2 to 5 Nominal Tons



UNIT 583A

Single-Packaged Rooftop Products with Energy-Saving Features.

- Direct Spark Ignition
- Low Sound Levels
- Up to 81% AFUE
- 12 SEER

FEATURES/BENEFITS

One-piece heating and cooling units with low sound levels, easy installation, low maintenance, and dependable performance.

EASY INSTALLATION—Factory-assembled package is a compact, fully self-contained, combination gas heating/electric cooling unit that is pre-wired, pre-piped, and pre-charged for minimum installation expense.

These units are available in a variety of standard and optional heating/cooling size combinations with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite unit base eliminates rust problems associated with ground level applications.

CONVERTIBLE DUCT CONFIGURATION—Unit is designed for easy use in either downflow or horizontal applications. Each unit is easily converted from horizontal to downflow with the use of two standard duct covers.

EFFICIENT OPERATION

High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of 12.0 and AFUE (Annual Fuel Utilization Efficiency) ratings as high as 81%.

Energy-Saving, Direct Spark Ignition saves gas by operating only when the room thermostat calls for heating. Standard units are furnished with natural gas controls. A low-cost field-installed kit for propane conversion is available for all units.

583A units with an "N" in the thirteenth position of model number are dedicated Low NOx units designed for California installations. These models meet the California maximum oxides of nitrogen (NOx) emissions requirement of 40 nanograms/joule or less as shipped from the factory and **MUST** be installed in California Air Quality Management Districts where a Low NOx rule exists.

DURABLE, DEPENDABLE COMPONENTS

Compressors are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Monoport Inshot Burners produce precise air-to-gas mixture, which provides for clean and efficient combustion. The large monoport on the inshot (or injection type) burners seldom, if ever, requires cleaning. All gas furnace components are accessible in one compartment.

Turbo-Tubular™ Heat Exchangers are constructed of aluminized steel for corrosion resistance and optimum heat transfer for improved efficiency. The tubular design permits hot gases to make multiple passes across the path of the supply air.

In addition, dimples located on the heat exchanger walls force the hot gases to stay in close contact with the walls, improving heat transfer.

Direct-Drive Multi-Speed, PSC (Permanent Split Capacitor) Blower Motor is standard on all 583A models.

Direct-Drive, PSC Condenser-Fan Motors are designed to help reduce energy consumption and provide for cooling operation down to 40°F outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Corporate Thermostats include the Time Guard® II anti-short cycle protection circuitry. If an Original Equipment Manufacture (OEM) thermostat is used the Time Guard II field installed anti-short cycle kit must be used.

Refrigerant System is designed to provide dependability. Liquid refrigerant strainers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

Evaporator and Condenser Coils are computer-designed for optimum heat transfer and cooling efficiency. The evaporator coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The condenser coil is internally mounted on the top tier of the unit. A FIOP (Factory-Installed Option) metal louvered grille is available on all models. Copper fin coils and pre-coated fin coils are available from the factory by special order. These coils are recommended in applications where aluminum fins are likely to be damaged due to corrosion. They are ideal for seacoast applications.

Low Sound Ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72 dB. (See page 3.)

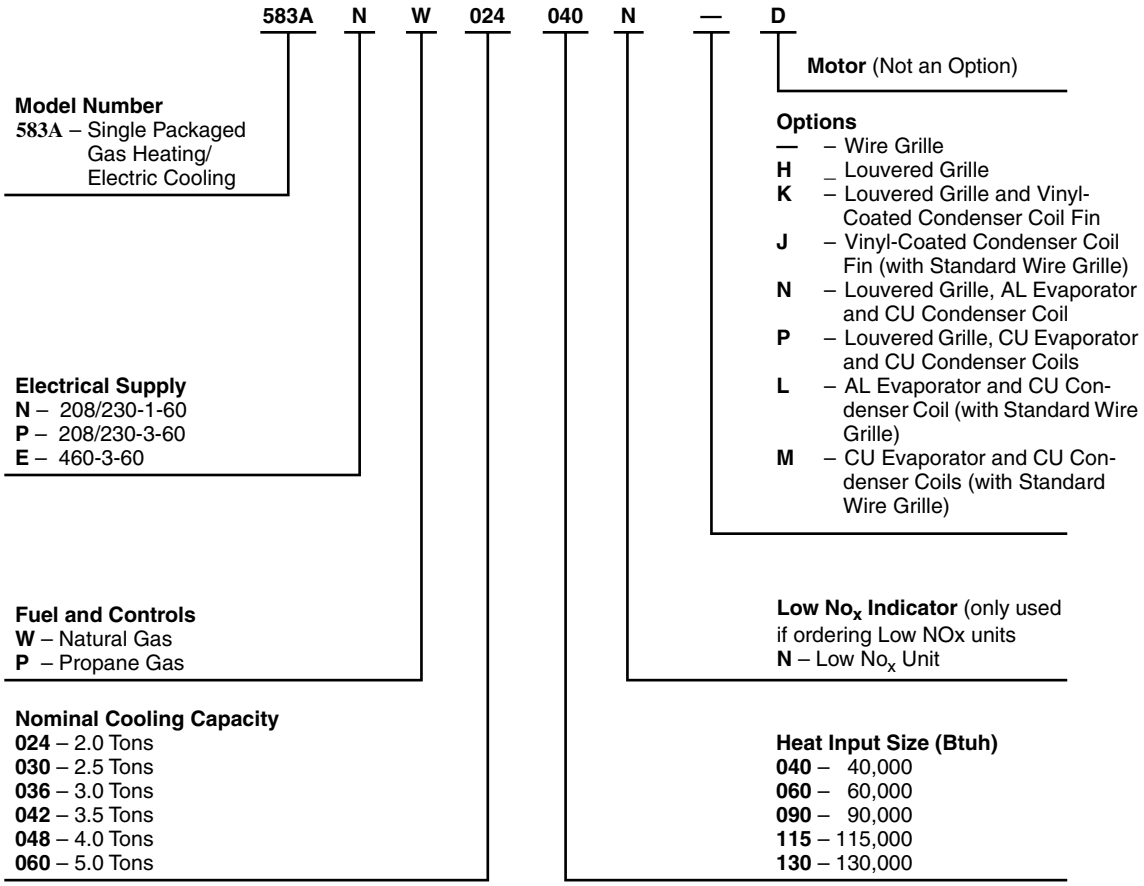
Easy to Service Cabinets provide easy single-panel accessibility to serviceable components during maintenance and installation. The unit base with integrated drain provides easy ground level installation with or without a mounting pad. Convenient handholds are provided to manipulate the unit on the jobsite. A nesting feature ensures a positive unit base to roof curb seal when the unit is roof mounted. A convenient 3/4-in. wide perimeter flange makes frame mounting on a rooftop easy.

Downflow Operation is easily provided in the field to allow vertical ductwork connections. The unit base utilizes knockout style seals on the bottom openings to ensure a positive seal in the horizontal airflow mode.

Integrated Gas Control (IGC) Board provides safe and efficient control of heating and simplifies troubleshooting through its built-in diagnostic function.

Cabinets are constructed of heavy-duty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours in salt spray. Interior surfaces of the evaporator/heat exchanger compartment are insulated with cleanable semi-rigid insulation board, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers No. 62P.) The sloped drain minimizes standing water in the drain.

MODEL NUMBER NOMENCLATURE


583A N W 024 040 N — D
Motor (Not an Option)
Model Number
583A – Single Packaged Gas Heating/ Electric Cooling
Options
— – Wire Grille
H – Louvered Grille
K – Louvered Grille and Vinyl-Coated Condenser Coil Fin
J – Vinyl-Coated Condenser Coil Fin (with Standard Wire Grille)
N – Louvered Grille, AL Evaporator and CU Condenser Coil
P – Louvered Grille, CU Evaporator and CU Condenser Coils
L – AL Evaporator and CU Condenser Coil (with Standard Wire Grille)
M – CU Evaporator and CU Condenser Coils (with Standard Wire Grille)
Electrical Supply
N – 208/230-1-60
P – 208/230-3-60
E – 460-3-60
Low Nox Indicator (only used if ordering Low NOx units
N – Low Nox Unit
Fuel and Controls
W – Natural Gas
P – Propane Gas
Nominal Cooling Capacity
024 – 2.0 Tons
030 – 2.5 Tons
036 – 3.0 Tons
042 – 3.5 Tons
048 – 4.0 Tons
060 – 5.0 Tons
Heat Input Size (Btuh)
040 – 40,000
060 – 60,000
090 – 90,000
115 – 115,000
130 – 130,000

LEGEND
CU — Copper

ARI* CAPACITIES
COOLING CAPACITIES AND EFFICIENCIES

UNIT 583A	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITIES (Btuh)	SEER†	SOUND RATINGS** (dB)
024040 **024060**	2	800	24,000	12.0	72
030040 **036060**	2-1/2	1000	30,000	12.0	72
036060 **036090**	3	1200	35,000	12.0	74
042060 **042090**	3-1/2	1400	42,000	12.0	74
048090 **048115** **048130**	4	1600	48,000	12.0	80
060090 **060115** **060130**	5	1750	58,000	12.0	78

LEGEND
dB — Sound Levels (decibels)
db — Dry Bulb
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb
* Air Conditioning & Refrigeration Institute.
† Rated in accordance with U.S. Government DOE (Department of Energy) test procedures and/or ARI Standard 210/240-94.
** Tested in accordance with ARI Standard 270-95 (not listed in ARI).

NOTES:
1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
   Cooling Standard: 80°F db, 67°F wb indoor entering-air temperature and 95°F db outdoor entering-air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

ARI* CAPACITIES (cont)

HEATING CAPACITIES AND EFFICIENCIES

UNIT 583A	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE RANGE (°F)	AFUE (%)
024040	40,000	31,000	20-50	80.1
030040				80.1
024060	60,000	46,000	35-65	78.4
030060		46,000	35-65	78.4
036060		46,000	25-55	78.7
042060		47,000	15-45	78.7
036090	88,000	70,000	45-75	79.9
042090	90,000	71,000	35-65	79.9
048090	90,000	70,000	25-55	78.6
060090	90,000	70,000	25-55	78.6
048115	115,000	92,000	35-65	81.1
060115				
048130	130,000	104,000	40-70	80.3
060130		103,000		

LEGEND

AFUE — Annual Fuel Utilization Efficiency

NOTE: Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

OUTDOOR SOUND: OCTAVE BAND DATA—DECIBELS

UNIT	583A					
Frequency (Hz)	**024**	**030**	**036**	**042**	**048**	**060**
63	43.6	52.6	49.5	56.8	54.7	55.5
125	54.1	47.3	56.4	56.9	64.0	64.1
250	57.1	58.2	61.0	64.0	69.9	66.6
500	64.9	63.2	67.4	68.0	73.3	70.6
1000	67.6	66.1	68.1	67.7	73.5	72.6
2000	64.1	64.0	65.8	64.6	70.4	69.8
4000	59.7	61.3	64.8	61.3	66.7	67.5
8000	53.5	57.0	56.8	55.5	60.5	61.6

Sound Levels (decibels)

PHYSICAL DATA

UNIT SIZE 583A	024040	024060	030040	030060	036060	036090	042060	042090
NOMINAL CAPACITY (ton)	2	2	2-1/2	2-1/2	3	3	3-1/2	3-1/2
OPERATING WEIGHT (lb)	290	290	313	313	321	321	382	382
COMPRESSORS	Scroll							
Quantity	1							
REFRIGERANT (R-22)								
Quantity (lb)	3.7	3.7	4.4	4.4	5.2	5.2	6.4	6.4
REFRIGERANT METERING DEVICE	Acutrol™ Device							
Orifice ID (in.)	.034	.034	.030	.030	.032	.032	.034	.034
CONDENSER COIL								
Rows—Fins/in. Face Area (sq ft)	1—17 10.8	1—17 10.8	1—17 12.7	1—17 12.7	2—17 9.1	2—17 9.1	2—17 12.3	2—17 12.3
CONDENSER FAN								
Nominal Cfm Diameter (in.) Motor Hp (Rpm)	2350 22 1/8 (825)	2350 22 1/8 (825)	2350 22 1/8 (825)	2350 22 1/8 (825)	2350 22 1/8 (825)	2350 22 1/8 (825)	3300 22 1/4 (1100)	3300 22 1/4 (1100)
EVAPORATOR COIL								
Rows—Fins/in. Face Area (sq ft)	3—15 3.1	3—15 3.1	3—15 3.7	3—15 3.7	3—15 3.7	3—15 3.7	3—15 4.7	3—15 4.7
EVAPORATOR BLOWER								
Nominal Airflow (Cfm) Size (in.) Motor Hp (RPM)	800 10 x 10 1/4 (1075)	800 10 x 10 1/4 (1075)	1000 10 x 10 1/4 (1075)	1000 10 x 10 1/4 (1075)	1200 11 x 10 1/2 (1075)	1200 11 x 10 1/2 (1075)	1400 11 x 10 3/4 (1075)	1400 11 x 10 3/4 (1075)
FURNACE SECTION*								
Burner Orifice No. (Qty—Drill Size) Natural Gas Burner Orifice No. (Qty—Drill Size) Liquid Propane	2—44 2—50	2—38 2—46	2—44 2—50	2—38 2—46	2—38 2—46	3—38 3—46	2—38 2—46	3—38 3—46
RETURN-AIR FILTERS (in.)†								
Throwaway	20 x 20 x 1	20 x 20 x 1	20 x 20 x 1	20 x 20 x 1	20 x 24 x 1	20 x 24 x 1	24 x 30 x 1	24 x 30 x 1

UNIT SIZE 583A	048090	048115	048130	060090	060115	060130
NOMINAL CAPACITY (ton)	4	4	4	5	5	5
OPERATING WEIGHT (lb)	421	421	421	468	468	468
COMPRESSORS	Scroll					
Quantity	1					
REFRIGERANT (R-22)						
Quantity (lb)	8.3	8.3	8.3	8.1	8.1	8.1
REFRIGERANT METERING DEVICE	Acutrol™ Device					
Orifice ID (in.)	.034	.034	.034	.032	.032	.032
CONDENSER COIL						
Rows—Fins/in. Face Area (sq ft)	2—17 12.3	2—17 12.3	2—17 12.3	2—17 16.4	2—17 16.4	2—17 16.4
CONDENSER FAN						
Nominal Cfm Diameter (in.) Motor Hp (Rpm)	3300 22 1/4 (1100)	3300 22 1/4 (1100)	3300 22 1/4 (1100)	3300 22 1/4 (1100)	3300 22 1/4 (1100)	3300 22 1/4 (1100)
EVAPORATOR COIL						
Rows—Fins/in. Face Area (sq ft)	4—15 4.7	4—15 4.7	4—15 4.7	4—15 4.7	4—15 4.7	4—15 4.7
EVAPORATOR BLOWER						
Nominal Airflow (Cfm) Size (in.) Motor Hp (RPM)	1600 11 x 10 3/4 (1075)	1600 11 x 10 3/4 (1075)	1600 11 x 10 3/4 (1075)	1750 11 x 10 1.0 (1075)	1750 11 x 10 1.0 (1075)	1750 11 x 10 1.0 (1075)
FURNACE SECTION*						
Burner Orifice No. (Qty—Drill Size) Natural Gas Burner Orifice No. (Qty—Drill Size) Liquid Propane	3—38 3—46	3—33 3—42	3—31 3—41	3—38 3—46	3—33 3—42	3—31 3—41
RETURN-AIR FILTERS (in.)†						
Throwaway	24 x 30 x 1	24 x 30 x 1	24 x 30 x 1	24 x 30 x 1	24 x 30 x 1	24 x 30 x 1

* Based on altitude of 0 to 2000 feet.

†Required filter sizes shown are based on the larger of the ARI (Air Conditioning and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/min for throwaway type or 450 ft/min for high-capacity type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wg.

OPTIONS AND ACCESSORIES

FACTORY-INSTALLED OPTIONS

Louvered Grille provides hail and vandalism protection. See model number nomenclature for louvered grille options.

Coil Options include copper/copper and vinyl-coated construction for refrigerant coils. Units are shipped standard with copper tube/aluminum fin construction. See model number nomenclature for coil options.

FIELD-INSTALLED ACCESSORIES

Economizer with Solid-State Controls and Barometric Relief Dampers
Manual Air Damper (25% open)
Filter Rack
Flat Roof Curbs (8-in. and 14-in.)
Square-to-Round Duct Transition Kit
Corporate Thermostats
Controls Upgrade Kit
Crankcase Heater
Compressor Hard Start Kit (for use on single-phase units only)
LP Conversion Kit
High Altitude Kit
Rigging Kit
Low Ambient Kit (Motormaster® II Control)
Solid-State Time Guard® II Device

Economizer with Solid-State Controls and Barometric Relief Dampers includes filter racks and provides outdoor air during cooling and reduces compressor operation.

Manual Outside Air Damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.

Flat Roof Curbs in both 8 in. and 14 in. sizes are available for roof mounted applications.

Square-to-Round Duct Transition Kit enables 024-048 size units to be fitted to 14 in. round ductwork.

Compressor Hard Start Kit assists compressor start-up by providing additional starting torque on single phase units and prolongs compressor motor life.

Corporate Thermostats provide control for the system heating and cooling functions. Thermostat models are available in both programmable and non-programmable versions, and include short-cycling protection.

Controls Upgrade Kit supplies high and low pressure safety protection and protects the unit from operating in unsuitable conditions.

Crankcase Heater provides anti-floodback protection for low-load cooling applications.

LP (Liquid Propane) Conversion Kit allows for conversion from natural gas to liquid propane fuel.

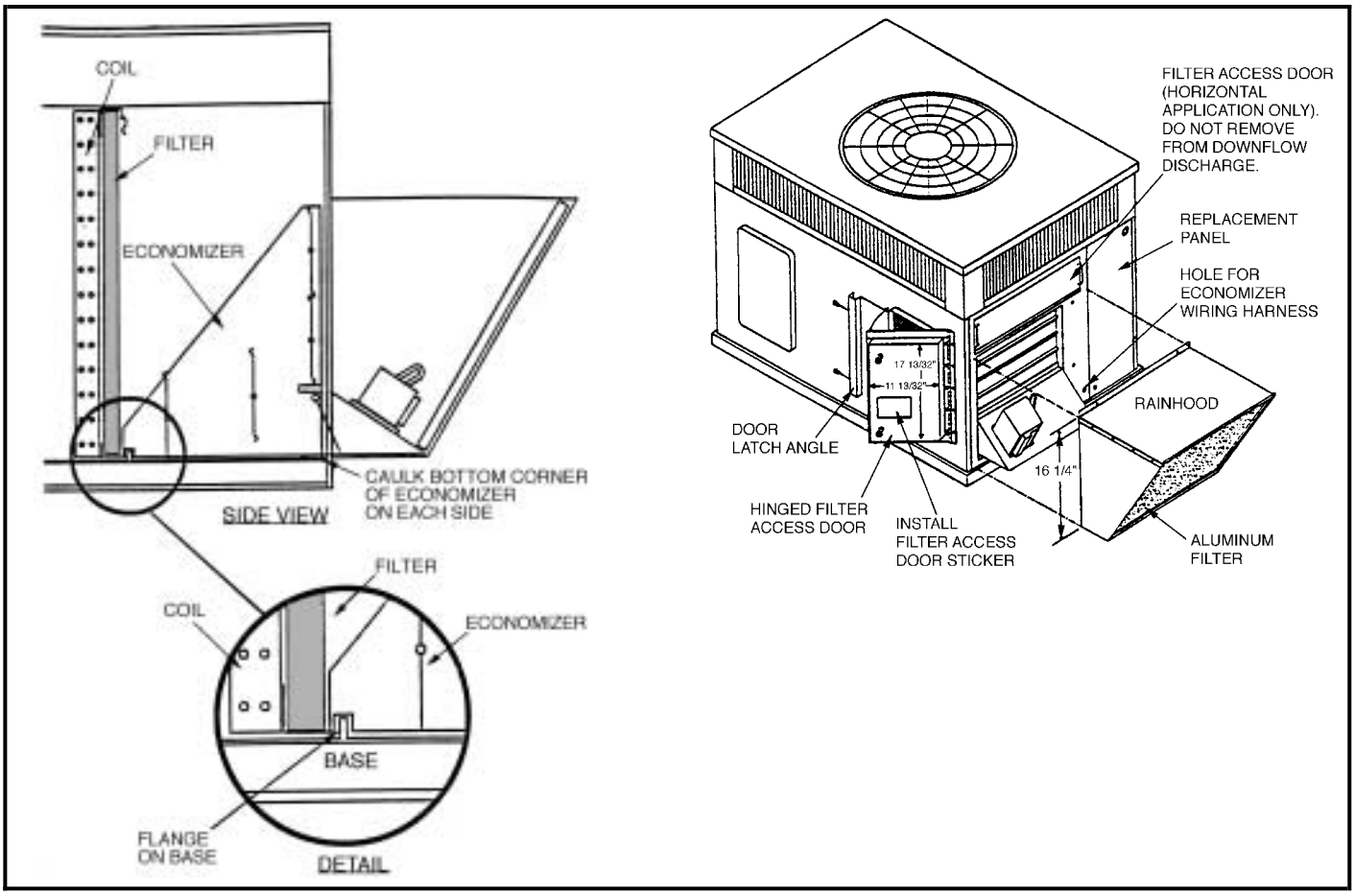
Rigging Kit includes 4 lifting brackets which are inserted into the unit base rigging holds to rig units for rooftop installations.

Low-Ambient kit (Motormaster II Control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F.

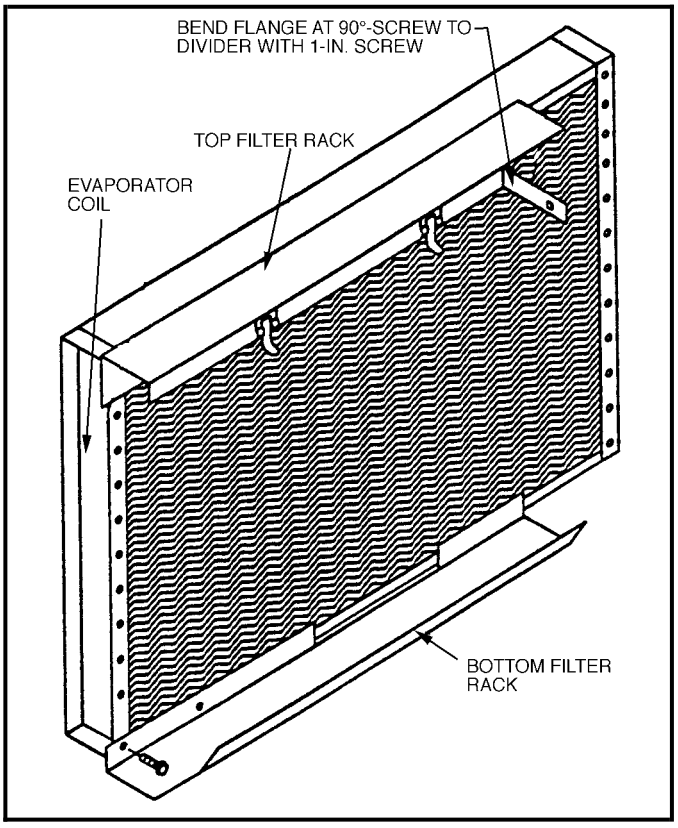
Solid-State Time Guard II Device provides short-cycling protection for the compressor. Not required with corporate electronic thermostats.

Filter Rack features easy installation, serviceability, and high-filtering performance for vertical or horizontal applications.

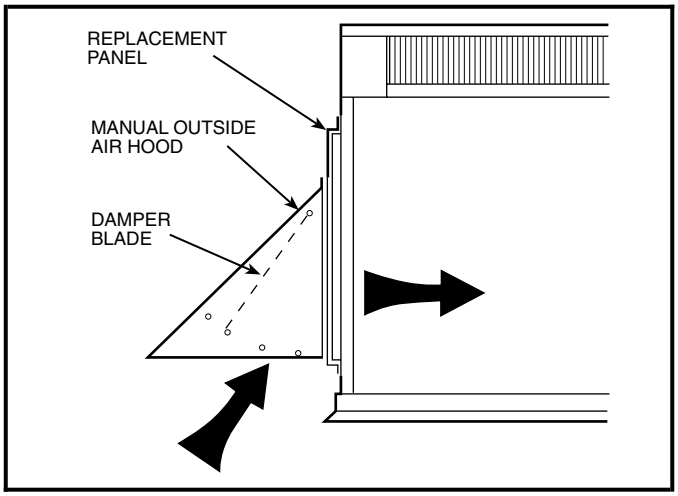
High Altitude Kit is for use at 2001 to 6000 ft above sea level. Kit consists of natural gas orifices that compensate for gas heat operation at high altitude.



Economizer

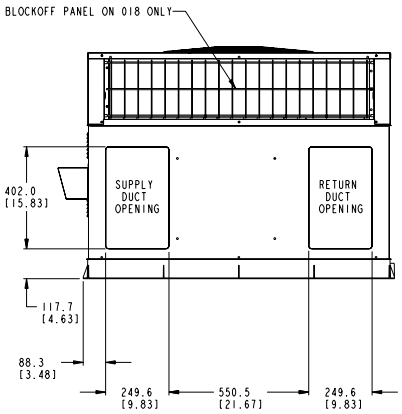


Filter Rack

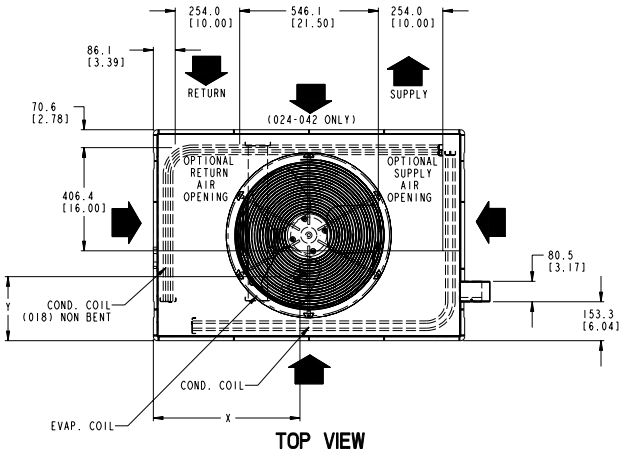


Manual Outside Air Damper

BASE UNIT DIMENSIONS — UNIT SIZES 024-036



REAR VIEW



TOP VIEW

REQUIRED CLEARANCE TO COMBUSTIBLE MATL.

	INCHES [mm]
TOP OF UNIT	14.00 [355.6]
DUCT SIDE OF UNIT	2.00 [50.8]
SIDE OPPOSITE DUCTS	14.00 [355.6]
BOTTOM OF UNIT	0.50 [12.7]
ELECTRIC HEAT PANEL	36.00 [914.4]

NEC. REQUIRED CLEARANCES.

	INCHES [mm]
BETWEEN UNITS, POWER ENTRY SIDE	42.00 [1066.8]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36.00 [914.0]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE	42.00 [1066.8]

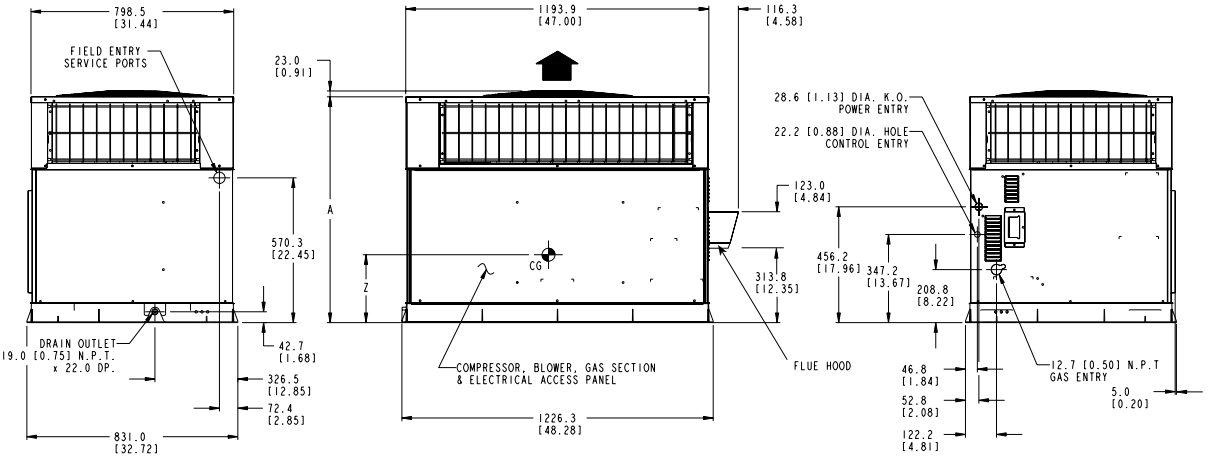
REQUIRED CLEARANCE FOR OPERATION AND SERVICING

	INCHES [mm]	
EVAP. COIL ACCESS SIDE	36.00 [914.0]	
POWER ENTRY SIDE	36.00 [914.0]	
(EXCEPT FOR NEC REQUIREMENTS)		
UNIT TOP	48.00 [1219.2]	
SIDE OPPOSITE DUCTS	36.00 [914.0]	
DUCT PANEL	12.00 [304.8]	*

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12.00 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISE.

LEGEND
CG - Center of Gravity
COND - Condensor
EVAP - Evaporator
NEC - National Electrical Code
REQ'D - Required

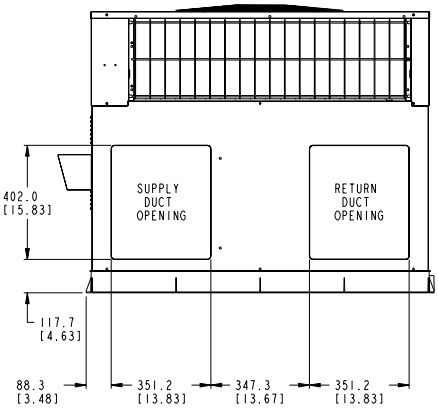
NOTE: Dimensions are in in. [mm]



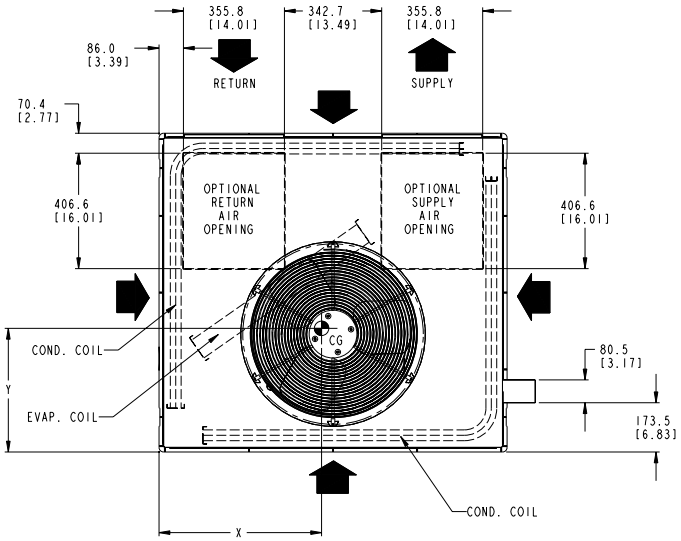
LEFT SIDE VIEW — FRONT VIEW — RIGHT SIDE VIEW

UNIT 583A	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		UNIT HEIGHT in. [mm] "A"	CENTER OF GRAVITY in. [mm]		
		lb	kg		X	Y	Z
024040/060	208/230-1-60	290.0	131.8	37.02 [940.3]	22.0 [558.8]	14.5 [368.3]	16.0 [406.4]
030040/060	208/230-1-60, 208/230-3-60	313.0	142.3	39.02 [991.1]	22.0 [558.8]	15.3 [387.4]	17.6 [447.0]
036060/090	208/230-1-60, 208/230-3-60, 460-3-60	321.0	145.9	35.02 [889.5]	22.0 [558.8]	15.3 [387.4]	16.5 [419.1]

BASE UNIT DIMENSIONS – UNIT SIZES 042-060



REAR VIEW



TOP VIEW

REQ'D CLEARANCES FOR OPERATION AND SERVICING. in. (mm)

Evaporator coil access side	36 (914)
Power entry side (except for NEC requirements)	36 (914)
Unit top	48 (1219)
Side opposite ducts	36 (914)
Duct panel	12 (304.8)*

*Minimum distances: If unit is placed less than 12 in. (304.8 mm) from wall system, then the system performance may be compromised.

REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. in. (mm)

Top of unit	14 (355.6)
Duct side of unit	2 (50.8)
Side opposite ducts	14 (355.6)
Bottom of unit	0.50 (12.7)
Flue panel	36 (914.4)

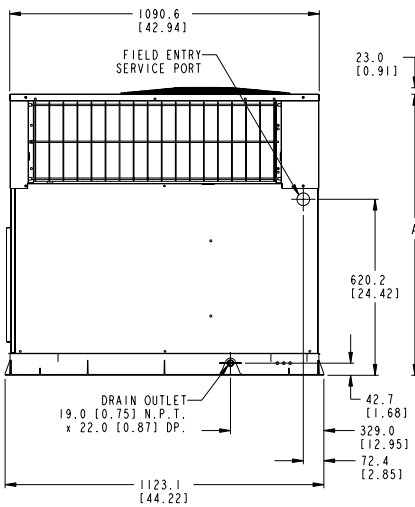
NEC REQ'D CLEARANCES. in. (mm)

Between units, power entry side	42 (1066.8)
Unit and ungrounded surfaces, power entry side	36 (914)
Unit and block or concrete walls and other grounded surfaces, control box side	42 (1066.8)

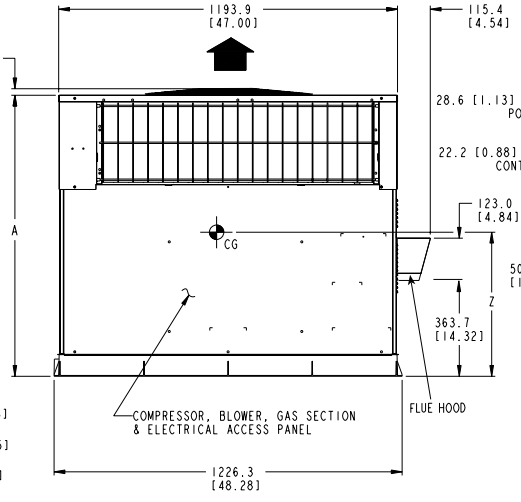
LEGEND

CG — Center of Gravity
COND — Condenser
EVAP — Evaporator
NEC — National Electrical Code
REQ'D — Required

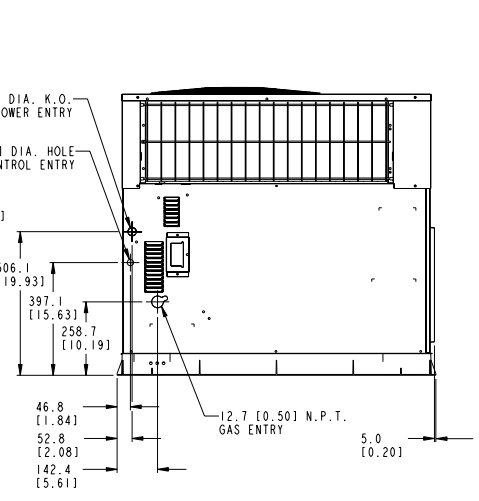
NOTE: Dimensions are in mm [in.]



LEFT SIDE VIEW



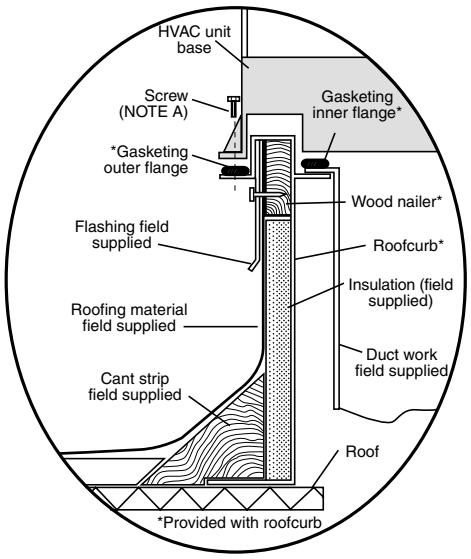
FRONT VIEW



RIGHT SIDE VIEW

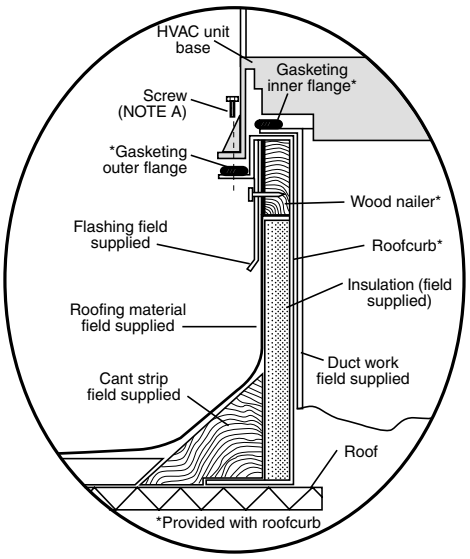
UNIT 583A	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		UNIT HEIGHT in. [mm] "A"	CENTER OF GRAVITY in. [mm]		
		lb	kg		X	Y	Z
042060/090	208/230-1-60, 208/230-3-60, 460-3-60	382	173.6	38.98 [990.2]	23.0 [584.2]	16.3 [412.8]	16.6 [421.6]
048090/115/130	208/230-1-60, 208/230-3-60, 460-3-60	421	191.4	38.98 [990.2]	21.5 [546.1]	16.6 [422.1]	18.0 [457.2]
060090/115/130	208/230-1-60, 208/230-3-60, 460-3-60	468	212.7	42.98 [1091.7]	23.5 [596.9]	16.3 [412.8]	17.6 [447.0]

ROOF CURB DIMENSIONS



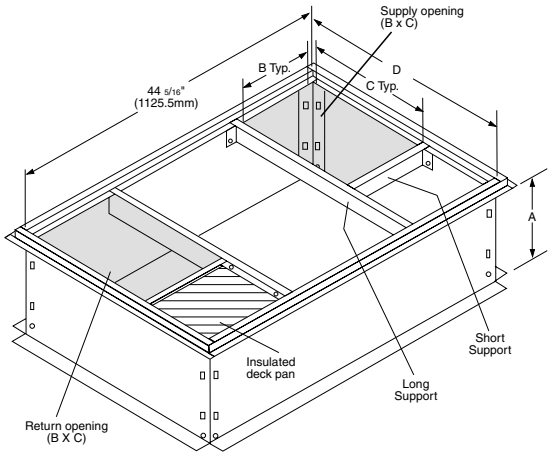
Roof Curb for Small Cabinet

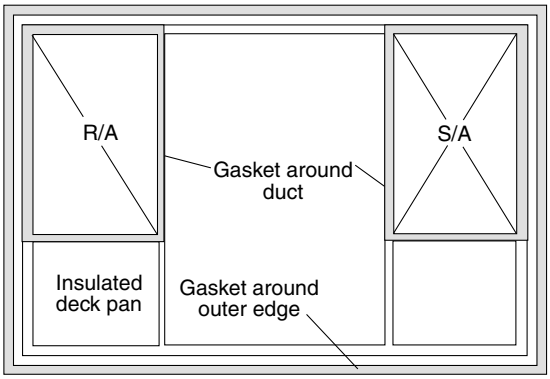
Note A: When unit mounting screw is used, retainer bracket must also be used.



Roof Curb for Large Cabinet

Note A: When unit mounting screw is used, retainer bracket must also be used.



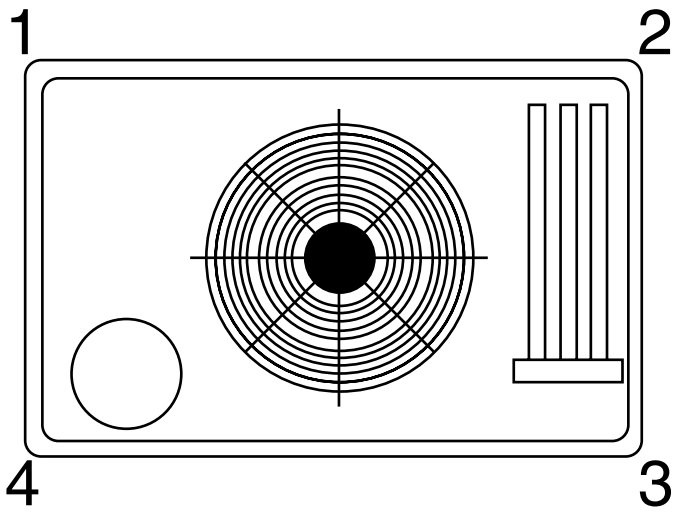


C00076

	UNIT SIZE	ODS ORDER NUMBER	A IN. [MM]	B IN. [MM]	C IN. [MM]	D IN. [MM]
ROOF CURB	024-036	CPRFCURB006A00	8 [203]	11 [279]	16-1/2 [419]	28-3/4 [730]
		CPRFCURB007A00	14 [356]	11 [279]	16-1/2 [419]	28-3/4 [730]
	042-060	CPRFCURB008A00	8 [203]	16-3/16 [411]	17-3/8 [441]	40-1/4 [1022]
		CPRFCURB009A00	14 [356]	16-3/16 [411]	17-3/8 [441]	40-1/4 [1022]

Notes:
1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied as required to unit being installed.
3. Dimensions in [ ] are in millimeters.
4. Roof curb is made of 16 gage steel.
5. Table lists only the dimensions per part number that have changed.
6. Attach ductwork to curb (flanges of duct rest on curb).
7. Insulated panels: 1-in. thick fiberglass 1 lb. density.
8. Dimensions are in inches.
9. When unit mounting screw is used (see Note A), a retainer bracket must be used as well. This bracket must also be used when required by code for hurricane or seismic conditions. This bracket is available through Micrometl.

583A CORNER WEIGHTS



CORNER #	2.0 ton	2.5 ton	3.0 ton	3.5 ton	4.0 ton	5.0 ton
1	55.1	59.5	61.0	72.6	80.0	88.9
2	52.2	56.3	57.8	68.8	75.8	84.2
3	89.9	97.0	99.5	118.4	130.5	145.1
4	92.8	100.2	102.7	122.2	134.7	149.8
TOTAL WEIGHT	290	313	321	382	421	468

SELECTION PROCEDURE (WITH EXAMPLE)

I DETERMINE COOLING AND HEATING REQUIREMENTS AT DESIGN CONDITIONS:

Given:

Required Cooling Capacity (TC).....34,000 Btuh
Sensible Heat Capacity (SHC).....25,000 Btuh
Required Heating Capacity.....60,000 Btuh
Condenser Entering Air Temperature..... 95°F
Indoor-Air Temperature .....80°F edb 67°F ewb
Evaporator Air Quantity .....1200 CFM
External Static Pressure..... 0.1 in. wg
Electrical Characteristics.....208-1-60

II SELECT UNIT BASED ON REQUIRED COOLING CAPACITY.

Enter Net Cooling Capacities table at condenser entering temperature of 95 F. Unit 583A—036 at 1200 cfm and 67° F ewb (entering wet bulb) will provide a total capacity of 35,000 Btuh and a SHC of 25,200 Btuh. Calculate SHC correction, if required, using Note 4 under Cooling Capacities tables.

III SELECT HEATING CAPACITY OF UNIT TO PROVIDE DESIGN CONDITION REQUIREMENTS.

In the Heating Capacities and Efficiencies table on page 4, note that the unit 583A—036090 will provide 70,000 Btuh with an input of 88,000 Btuh.

IV DETERMINE FAN SPEED AND POWER REQUIRE–MENTS AT DESIGN CONDITIONS.

Before entering the air delivery tables, calculate the total static pressure required. From the *given* example, the Wet Coil Pressure Drop Table, and the Filter Pressure Drop table on page 15 and 16, find at 1200 cfm:

External static pressure	0.1 in. wg
Wet Coil	0.1 in. wg
Filter	0.13 in. wg
Total static pressure	0.33 in. wg

Enter the table for Wet Coil Air Delivery — Horizontal and Downflow Discharge on page 15. For 208 v operation, deduct 10% from value given. At 0.33 ESP (external static pressure), the fan will deliver about 1404 cfm at medium speed. The fan speed should be set at medium speed.

V SELECT UNIT THAT CORRESPONDS TO POWER SOURCE AVAILABLE.

The Electrical Data table on page 20 shows that the unit is designed to operate at 208-1-60.

PERFORMANCE DATA

NET COOLING CAPACITIES

583A--024										
Temp (F) Air Ent Condenser		Evaporator Air—Cfm/BF								
		700/0.081			800/0.106			900/0.135		
		Evaporator Air—Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	22.3	24.9	27.6	22.9	25.3	28.1	23.3	25.6	28.3
	SHC	20.2	16.9	13.6	21.7	18.0	14.2	23.0	19.0	14.7
	kW	1.89	1.91	1.93	1.96	1.99	2.01	2.01	2.09	2.11
95	TC	21.4	23.8	26.5	21.9	24.0	27.0	22.4	24.5	27.2
	SHC	19.8	16.5	13.2	21.3	17.4	13.8	22.4	18.6	14.3
	kW	2.09	2.12	2.14	2.15	2.25	2.22	2.21	2.30	2.32
105	TC	20.5	22.8	25.4	21.0	23.2	25.8	21.5	23.3	26.0
	SHC	19.3	16.1	12.8	20.7	17.2	13.4	21.5	18.1	13.9
	kW	2.30	2.34	2.36	2.35	2.42	2.45	2.42	2.52	2.54
115	TC	19.5	21.7	24.2	20.0	22.0	24.5	20.6	22.1	24.6
	SHC	18.8	15.7	12.4	20.0	16.7	13.0	20.6	17.7	13.4
	kW	2.53	2.58	2.60	2.58	2.66	2.69	2.66	2.75	2.79
125	TC	18.5	20.6	23.0	19.2	20.8	23.2	19.7	20.9	23.3
	SHC	18.3	15.2	11.9	19.2	16.3	12.5	19.7	17.2	13.0
	kW	2.78	2.84	2.88	2.84	2.93	2.96	2.93	3.02	3.06

583A--030										
Temp (F) Air Ent Condenser		Evaporator Air—Cfm/BF								
		875/0.138			1000/0.149			1125/0.159		
		Evaporator Air—Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	27.5	30.2	32.7	28.2	30.9	33.4	28.8	31.4	33.8
	SHC	24.4	20.3	16.0	26.2	21.5	16.7	27.8	22.7	17.4
	kW	2.58	2.60	2.62	2.59	2.61	2.62	2.59	2.61	2.63
95	TC	26.2	29.1	31.8	27.0	30.0	32.4	27.6	30.3	32.9
	SHC	23.9	20.0	15.7	25.8	21.3	16.5	27.6	22.6	17.2
	kW	2.87	2.88	2.89	2.87	2.88	2.90	2.87	2.88	2.90
105	TC	24.9	27.8	30.6	25.6	28.4	31.2	26.4	29.0	31.7
	SHC	23.1	19.5	15.4	25.1	21.0	16.2	26.4	22.3	17.0
	kW	3.15	3.18	3.20	3.17	3.19	3.20	3.18	3.19	3.20
115	TC	23.3	26.2	29.2	24.1	26.9	29.8	25.0	27.4	30.3
	SHC	22.3	18.9	14.9	24.1	20.4	15.8	25.0	21.8	16.6
	kW	3.45	3.52	3.52	3.46	3.52	3.53	3.49	3.52	3.53
125	TC	21.6	24.5	27.6	22.6	25.1	28.2	23.6	25.6	28.6
	SHC	21.6	18.1	14.4	22.6	19.6	15.3	23.6	21.1	16.1
	kW	3.67	3.85	3.88	3.80	3.86	3.89	3.83	3.87	3.89

See Legend and Notes on page 14.

PERFORMANCE DATA (cont)

NET COOLING CAPACITIES (cont)

583A--036

Temp (F) Air Ent Condenser		Evaporator Air—Cfm/BF								
		1050/0.111			1200/0.142			1350/0.181		
		Evaporator Air—Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	31.4	36.2	40.6	32.4	37.1	41.2	33.1	37.6	41.5
	SHC	28.7	24.4	19.7	30.9	26.0	20.4	33.1	27.3	20.9
	kW	2.82	2.88	2.93	2.93	3.01	3.06	3.03	3.16	3.20
95	TC	30.0	34.3	39.0	30.7	35.0	39.6	31.7	35.7	39.9
	SHC	28.0	23.7	19.2	30.1	25.2	19.9	31.7	26.7	20.5
	kW	3.12	3.21	3.26	3.22	3.37	3.38	3.34	3.48	3.53
105	TC	28.6	32.6	37.3	29.4	33.4	37.9	30.4	34.0	38.2
	SHC	27.3	23.1	18.6	29.4	24.7	19.4	30.4	26.1	20.0
	kW	3.45	3.56	3.60	3.53	3.68	3.73	3.67	3.83	3.88
115	TC	27.0	30.8	35.7	28.2	31.5	36.2	29.1	32.0	36.4
	SHC	26.4	22.4	18.0	28.2	23.9	18.8	29.1	25.4	19.4
	kW	3.77	3.93	3.97	3.87	4.06	4.11	4.03	4.20	4.26
125	TC	25.5	29.0	33.9	26.7	29.4	34.4	27.8	29.8	34.6
	SHC	25.5	21.7	17.4	26.7	23.2	18.2	27.8	24.6	18.8
	kW	4.09	4.29	4.37	4.22	4.44	4.50	4.40	4.58	4.65

583A--042

Temp (F) Air Ent Condenser		Evaporator Air—Cfm/BF								
		1225/0.057			1400/0.075			1575/0.099		
		Evaporator Air—Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	39.2	42.9	46.1	39.8	43.3	46.3	40.2	43.3	46.2
	SHC	35.4	29.5	23.4	37.4	30.7	23.8	39.1	31.6	24.0
	kW	3.81	3.82	3.79	3.93	3.97	3.93	4.06	4.15	4.09
95	TC	37.6	41.6	44.9	38.3	42.0	45.1	38.7	42.0	45.1
	SHC	34.4	29.0	23.0	36.6	30.3	23.5	38.7	31.3	23.8
	kW	3.80	3.82	3.80	3.91	4.04	3.94	4.03	4.16	4.11
105	TC	35.9	40.0	43.6	36.6	40.3	43.7	37.3	40.3	43.6
	SHC	33.6	28.4	22.5	35.6	29.7	23.0	37.3	30.8	23.4
	kW	3.79	3.83	3.80	3.89	3.98	3.95	3.99	4.17	4.12
115	TC	34.2	38.2	42.0	34.9	38.5	42.1	35.8	38.5	42.0
	SHC	32.7	27.7	21.9	34.9	29.1	22.5	35.8	30.2	22.9
	kW	3.77	3.83	3.81	3.86	3.99	3.95	3.93	4.18	4.13
125	TC	32.5	36.4	40.1	33.5	36.6	40.2	34.3	36.6	40.1
	SHC	31.8	26.9	21.2	33.5	28.3	21.8	34.3	29.4	22.2
	kW	3.75	3.83	3.81	3.82	3.99	3.95	3.91	4.18	4.13

See Legend and notes on page 14.

PERFORMANCE DATA (cont)

NET COOLING CAPACITIES (cont)

583A-048										
Temp (F) Air Entering Condenser		Evaporator Air — Cfm/BF								
		1400/0.050			1600/0.090			1800/0.120		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	47.9	50.8	53.9	47.6	50.5	53.6	46.8	49.7	53.1
	SHC	42.4	34.6	26.7	43.3	35.0	26.7	44.0	35.0	26.3
	kW	3.9	3.9	4.0	4.1	4.2	4.2	4.4	4.5	4.6
95	TC	46.7	49.1	51.7	46.1	48.7	51.4	45.5	47.8	50.7
	SHC	42.2	33.9	25.8	43.2	34.2	25.7	44.0	34.2	25.2
	kW	4.3	4.3	4.4	4.5	4.6	4.6	4.8	4.9	5.0
105	TC	45.6	47.8	50.4	45.2	47.3	49.9	44.5	46.4	48.9
	SHC	43.3	33.9	25.5	43.9	34.1	25.3	43.5	34.1	24.7
	kW	4.7	4.8	4.8	4.9	5.0	5.1	5.2	5.4	5.4
115	TC	44.7	46.7	49.0	44.2	46.0	48.4	43.5	45.1	47.4
	SHC	43.7	34.3	25.3	43.7	34.6	25.1	43.2	34.5	24.5
	kW	5.2	5.3	5.3	5.4	5.5	5.6	5.7	5.8	5.9
125	TC	43.3	45.2	47.6	42.9	44.6	47.0	42.3	43.5	45.9
	SHC	43.3	34.5	25.3	44.6	34.9	25.0	43.9	34.9	24.5
	kW	5.7	5.8	5.8	5.9	6.0	6.1	6.2	6.4	6.4

583A--060										
Temp (F) Air Ent Condenser		Evaporator Air—Cfm/BF								
		1750/0.082			2000/0.130			2250/0.162		
		Evaporator Air—Ewb (F)								
		62	67	72	62	67	72	62	67	72
85	TC	55.2	60.9	66.4	56.1	61.5	66.4	56.6	61.6	66.9
	SHC	49.9	42.1	33.8	53.2	44.3	33.9	55.9	46.3	35.3
	kW	4.92	4.97	5.00	5.14	5.23	5.28	5.41	5.55	5.59
95	TC	52.2	58.0	63.7	53.2	58.5	64.1	53.9	58.4	64.0
	SHC	48.2	41.0	32.7	51.8	43.2	33.6	53.9	44.8	34.2
	kW	5.39	5.57	5.50	5.64	5.75	5.77	5.90	6.03	6.09
105	TC	49.1	54.4	60.4	49.9	54.9	60.7	50.9	55.0	60.5
	SHC	47.3	39.4	31.5	49.9	41.6	32.4	50.9	43.5	33.0
	kW	5.87	5.98	6.02	6.13	6.22	6.30	6.34	6.57	6.62
115	TC	45.9	50.2	55.2	46.8	50.3	55.5	47.3	50.2	55.3
	SHC	45.3	37.4	29.4	46.8	39.4	29.8	47.3	41.0	30.8
	kW	6.39	6.48	6.54	6.57	6.75	6.81	6.85	7.07	7.14
125	TC	42.5	46.5	50.6	43.7	46.9	50.6	44.9	46.2	50.2
	SHC	42.5	36.1	27.3	43.7	38.4	28.2	44.9	39.5	28.6
	kW	7.03	7.13	7.13	7.22	7.38	7.40	7.51	7.67	7.72

LEGEND

BF — Bypass Factor
Ewb — Entering Wet-Bulb
kW — Total Unit Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) (net)

NOTES:
1. Ratings are net; they account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

4. The SHC is based on 80°F edb temperature of air entering evaporator coil.
   Below 80°F edb, subtract (corr factor x cfm) from SHC.
   Above 80°F edb, add (corr factor x cfm) to SHC.
   Correction Factor = 1.10 x (1−BF) x (edb−80).

PERFORMANCE DATA (cont)

DRY COIL AIR DELIVERY*—HORIZONTAL AND DOWNFLOW DISCHARGE—UNIT SIZES 024-060 (Deduct 10% for 208 Volts)

230 AND 460 VOLT												
Unit 583A	Motor Speed		External Static Pressure (in. wg)									
			0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
024	Low	Watts	281	282	281	278	276	—	—	—	—	—	—
		Cfm	899	828	757	691	619	—	—	—	—	—	—
	Med	Watts	—	—	—	375	370	363	357	352	—	—	—
		Cfm	—	—	—	969	897	824	744	649	—	—	—
	High	Watts	—	—	—	—	—	468	457	444	431	423	—
		Cfm	—	—	—	—	—	994	913	826	730	620	—
030	Low	Watts	246	244	243	241	—	—	—	—	—	—	—
		Cfm	982	860	808	736	—	—	—	—	—	—	—
	Med	Watts	343	339	336	332	328	322	317	—	—	—	—
		Cfm	1233	1170	1109	1038	953	855	754	—	—	—	—
	High	Watts	—	—	—	—	441	432	421	410	400	—	—
		Cfm	—	—	—	—	1202	1111	1021	929	826	—	—
036	Low	Watts	—	470	458	445	430	415	399	384	—	—	—
		Cfm	—	1463	1406	1344	1273	1188	1091	983	—	—	—
	Med	Watts	—	—	514	501	487	471	455	438	422	—	—
		Cfm	—	—	1497	1428	1348	1255	1152	1042	929	—	—
	High	Watt	—	—	—	646	636	626	614	602	589	—	—
		Cfm	—	—	—	1491	1412	1325	1128	1120	1003	—	—
042	Low	Watts	643	625	614	605	593	574	549	518	485	454	—
		Cfm	1626	1614	1579	1532	1478	1421	1361	1295	1218	1120	—
	Med	Watts	—	—	—	—	726	695	661	625	591	561	540
		Cfm	—	—	—	—	1731	1672	1610	1541	1456	1345	1193
	High	Watts	—	—	—	—	—	—	—	790	766	742	713
		Cfm	—	—	—	—	—	—	—	1699	1602	1494	1367
048	Low	Watts	614	588	577	572	566	556	539	517	491	—	—
		Cfm	1591	1549	1581	1490	1460	1421	1372	1312	1242	—	—
	Med	Watts	778	756	738	719	699	676	650	623	596	572	555
		Cfm	1854	1837	1804	1759	1705	1643	1577	1508	1440	1375	1315
	High	Watts	—	—	—	—	896	862	829	800	775	752	728
		Cfm	—	—	—	—	1956	1879	1797	1709	1615	1514	1406
060	Low	Watts	903	898	873	842	814	792	777	764	743	701	618
		Cfm	2249	2220	2149	2066	1988	1923	1871	1821	1751	1632	1424
	Med	Watts	—	1002	978	960	941	914	880	839	798	764	750
		Cfm	—	2465	2366	2272	2181	2091	2001	1909	1815	1718	1617
	High	Watts	—	—	—	1080	1080	1066	1041	1008	972	938	—
		Cfm	—	—	—	2390	2266	2208	2144	2041	1903	1772	—

*Air delivery values are without air filter and are for dry coil. (See Wet Coil Pressure Drop table.)

NOTE: Deduct field-supplied air filter pressure drop and wet coil pressure drop to obtain external static pressure available for ducting.

FILTER PRESSURE DROP (In. wg)

FILTER SIZE	CFM																		
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
20 X 20 X 1	0.05	0.07	0.08	0.10	0.12	0.13	0.14	0.15	—	—	—	—	—	—	—	—	—	—	—
20 X 24 X 1	—	—	—	—	0.09	0.10	0.11	0.13	0.14	0.15	0.16	—	—	—	—	—	—	—	—
24 X 30 X 1	—	—	—	—	—	—	—	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18

PERFORMANCE DATA (cont)

583A WET COIL PRESSURE DROP

UNIT SIZE 583A	AIRFLOW (cfm)	PRESSURE DROP (in. wg)
024	700	0.0535
	800	0.067
	900	0.123
030	900	0.0687
	1000	0.083
	1100	0.150
036	1100	0.084
	1200	0.100
	1300	0.177
042	1300	0.099
	1400	0.177
	1500	0.204
048	1500	0.199
	1600	0.137
	1700	0.156
060	1900	0.108
	2000	0.120
	2100	0.132

ECONOMIZER/1-in. FILTER PRESSURE DROP (in. wg)

UNIT 583A	PRESSURE DROP
024-036	0.20
042-060	0.25

PERFORMANCE DATA (cont)

HIGH ALTITUDE COMPENSATION

NATURAL GAS ONLY

ORIFICE CONVERSION – 3.5 in. WC MANIFOLD PRESSURE*

ALTITUDE (ft)	INPUT (Btuh)	OUTPUT (Btuh)	ORIFICE NUMBER†
0-2000	40,000	31,000	#44
	60,000	46,000	#38
	90,000	70,000	#38
	115,000	92,000	#33
	130,000	103,000	#31
2001-6000	32,075	24,858	#48
	48,547	37,219	#42
	72,820	56,638	#42
	90,094	72,075	#37
	102,630	81,315	#34

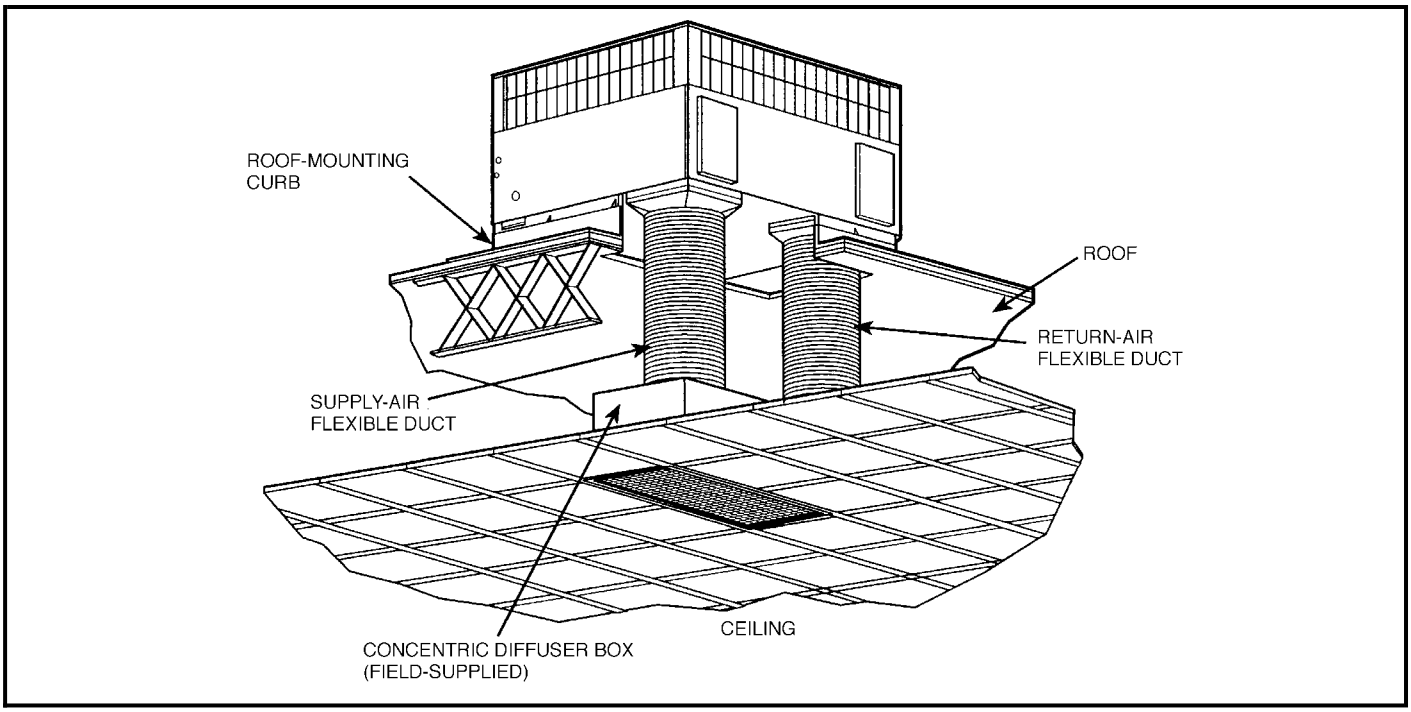
* As the height above sea level increases, there is less oxygen per cubic ft of air. Therefore, heat input rate should be reduced at higher altitudes.
† Orifices available through your distributor.

LIQUID PROPANE ONLY
ORIFICE CONVERSION – 3.5 in. wg MANIFOLD PRESSURE*

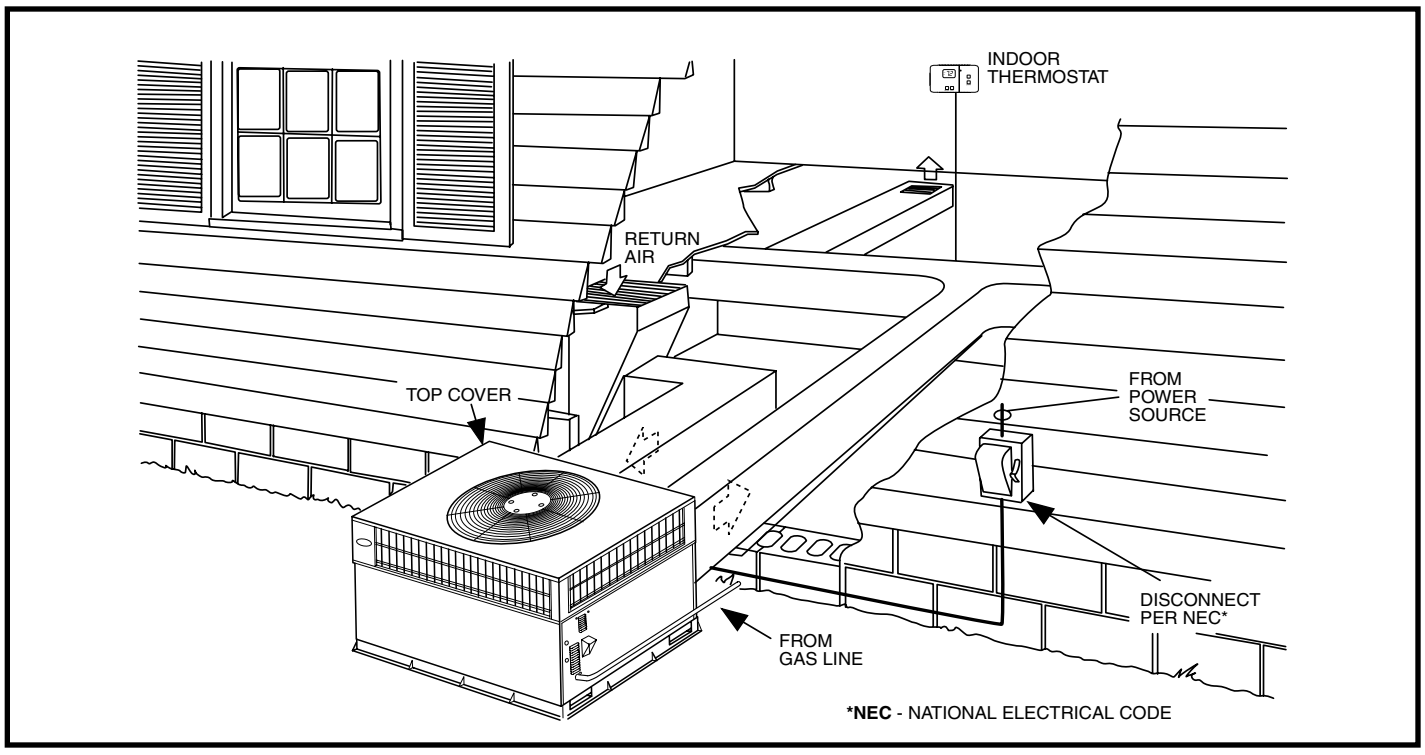
ALTITUDE (ft)	INPUT (Btuh)	OUTPUT (Btuh)	ORIFICE NUMBER†
0-2000	40,000	31,000	#50
	57,000	43,720	#46
	85,500	66,520	#46
	115,000	92,000	#42
	127,000	100,580	#41
2001-6000	33,834	26,221	#52
	49,238	37,766	#48
	73,856	57,461	#48
	94,571	75,657	#44
	101,284	80,214	#43

* As the height above sea level increases, there is less oxygen per cubic ft of air. Therefore, heat input rate should be reduced at higher altitudes.
† Orifices available through your distributor.

TYPICAL PIPING AND WIRING



Vertical Discharge



Horizontal Discharge

APPLICATION DATA

1. **Condensate trap**—A 2-in. condensate trap must be field supplied.
2. **Ductwork**—Secure downflow discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit with flanges.
3. **To convert a unit to downflow discharge**—Units are equipped with factory-installed inserts in the down-flow openings. Removal of the inserts is similar to removing an electrical knock-out. Use an accessory duct cover to seal the horizontal discharge openings in the unit. Units installed in horizontal discharge orientation do not require duct covers.
4. **Maximum cooling airflow**—To minimize the possibility of condensate blow-off from the evaporator, airflow through the units should not exceed 450 cfm per ton.
5. **Minimum cooling airflow**—The minimum cooling airflow is 350 cfm per ton.
6. **Minimum ambient cooling operation temperature**—All standard units have a minimum ambient operating temperature of 40°F. With accessory low ambient temperature kit, units can operate at temperatures down to 0°F.
7. **Minimum temperature**—Air entering the heat exchanger in heating mode must be a minimum of 50°F continuous and/or 45°F intermittent.

ELECTRICAL DATA

UNIT SIZE 583B	V-PH-Hz	VOLTAGE RANGE		COMPRESSOR		OUTDOOR FAN MOTOR	INDOOR FAN MOTOR	POWER SUPPLY	
		Min	Max	RLA	LRA	FLA	FLA	MCA	MAX FUSE OR CKT BKR
024	208/230-1-60	187	253	10.9	54.0	0.9	2.0	16.5	25
030	208/230-1-60	187	253	13.5	73.0	0.8	2.1	19.8	30
	208/230-3-60	187	253	9.0	63.0	0.8	2.1	14.2	20
036	208/230-1-60	187	253	16.7	97.0	0.8	3.6	25.3	40
	208/230-3-60	187	253	11.2	75.0	0.8	3.6	18.4	25
	460-3-60	414	506	5.4	37.5	0.9	1.9	9.6	15
042	208/230-1-60	187	253	17.9	104.0	1.6	4.1	28.1	45
	208/230-3-60	187	253	12.4	88.0	1.6	4.1	21.2	30
	460-3-60	414	506	6.1	44.0	0.9	2.0	10.5	15
048	208/230-1-60	187	253	23.4	126.0	1.6	4.1	34.9	45
	208/230-3-60	187	253	13.0	93.0	1.6	4.1	21.9	30
	460-3-60	414	506	6.4	46.5	0.9	2.0	10.8	15
060	208/230-1-60	187	253	28.8	169.0	1.6	6.2	43.8	60
	208/230-3-60	187	253	17.3	123.0	1.6	6.2	29.4	45
	460-3-60	414	506	9.0	62.0	0.9	3.2	15.4	20

LEGEND

FLA — Full Load Amps
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps

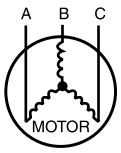
*Heater capacity (KW) based on heater voltage of 208v, 240v, & 480v. If power distribution voltage to unit varies from rated heater voltage, heater KW will vary accordingly.

NOTES:
1. In compliance with NEC (National Electrical Code) requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be Power Supply fuse. The CGA (Canadian Gas Association) units may be fuse or circuit breaker.
2. Minimum wire size is based on 60 C copper wire. If other than 60 C wire is used, or if length exceeds wire length in table, determine size from NEC.
3. Unbalanced 3-Phase Supply Voltage
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

   % Voltage imbalance

   $$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

EXAMPLE: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 452 = 5 v
(BC) 464 457 = 7 v
(AC) 457 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

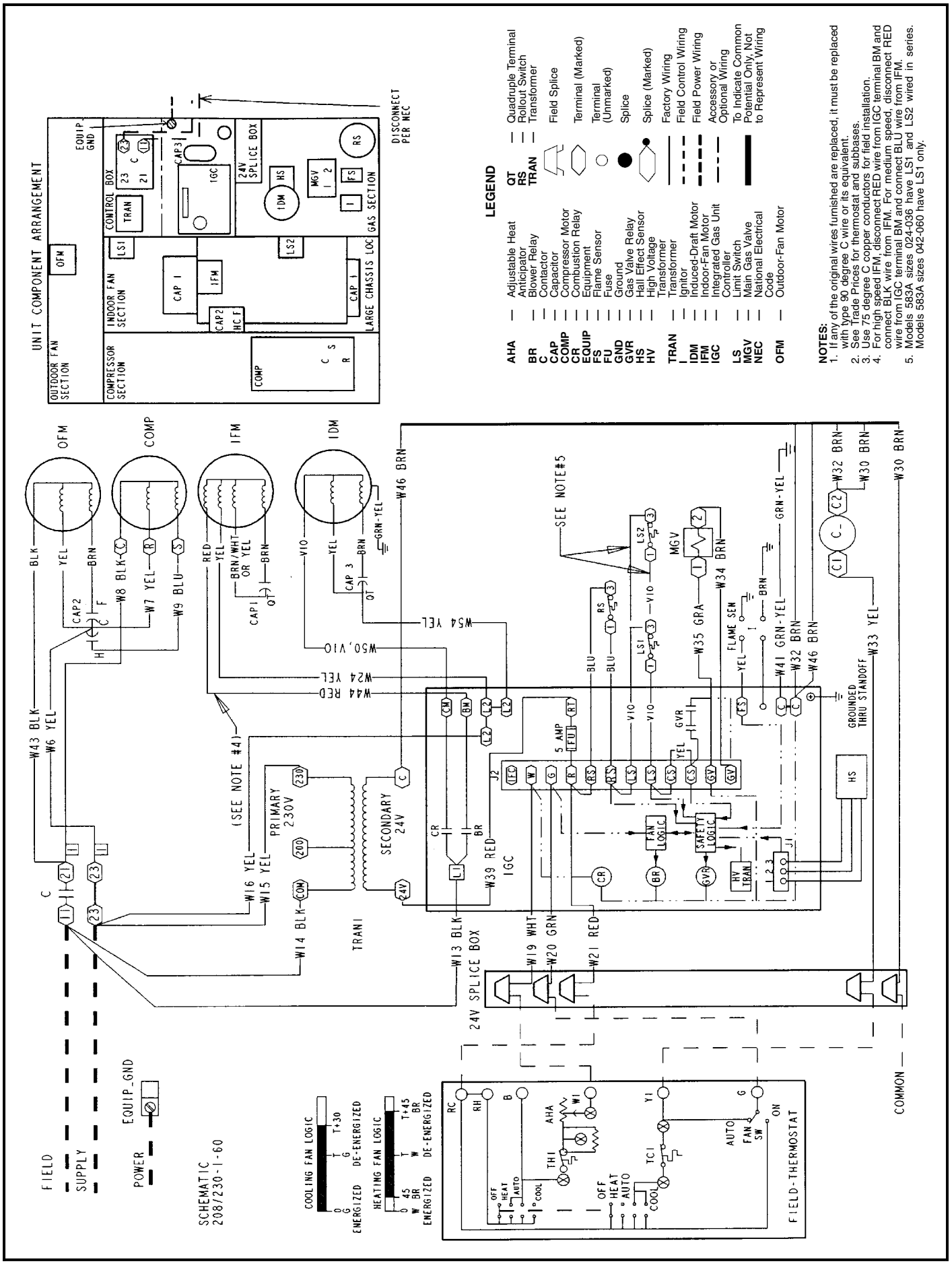
$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

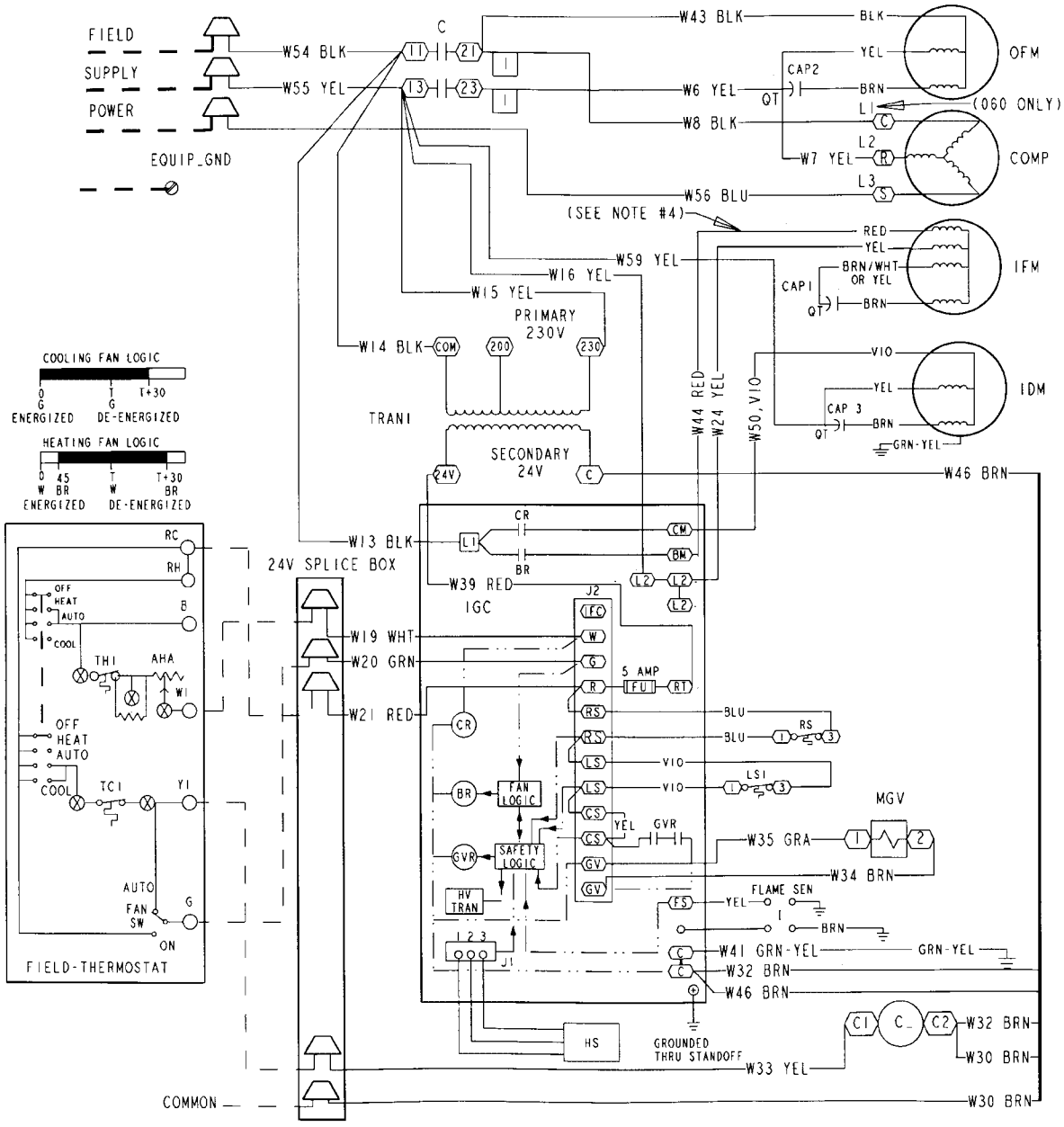
This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

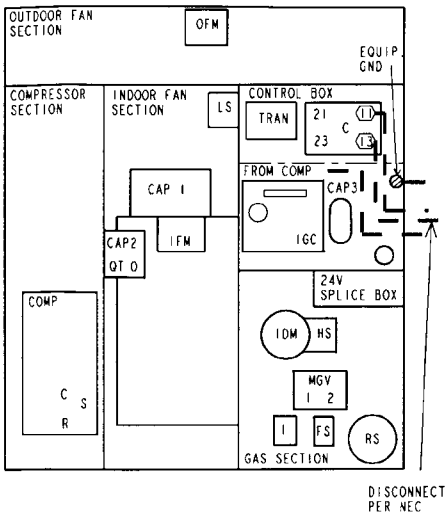
TYPICAL WIRING SCHEMATIC—208/230-1-60 SHOWN



TYPICAL WIRING SCHEMATIC—208/230-3-60 SHOWN



UNIT COMPONENT ARRANGEMENT



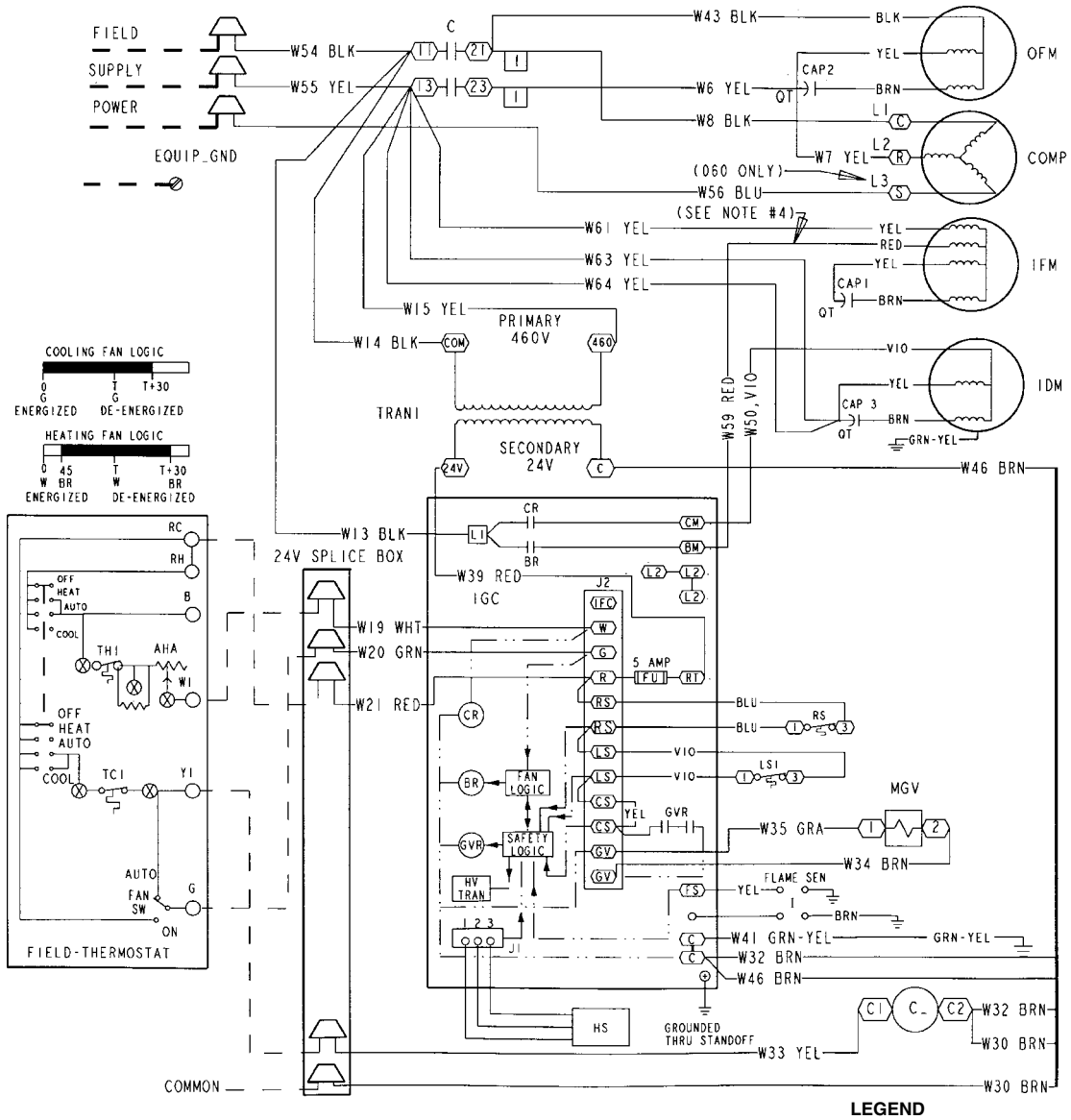
LEGEND

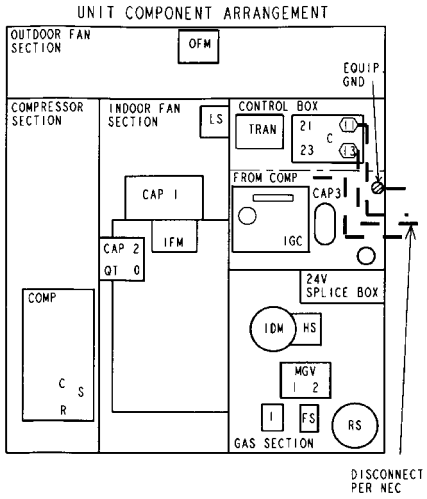
AHA	—	Adjustable Heat Anticipator
BR	—	Blower Relay
C	—	Contactor
CAP	—	Capacitor
COMP	—	Compressor Motor
CR	—	Combustion Relay
CS	—	Centrifugal Switch
EQUIP	—	Equipment
FS	—	Fusible Link
FU	—	Fuse
GND	—	Ground
GV	—	Gas Valve
GVR	—	Gas Valve Relay
HS	—	Hall Effect Sensor
HV	—	High Voltage
I	—	Ignitor
IDM	—	Induced-Draft Motor
IFC	—	Indoor-Fan Contactor
IFM	—	Indoor-Fan Motor
IGC	—	Integrated Gas Unit Controller
L1	—	Line
LS	—	Limit Switch
LS1	—	Limit Switch
MGV	—	Main Gas Valve
NEC	—	National Electrical Code
OFM	—	Outdoor-Fan Motor
QT	—	Quadruple Terminal
RS	—	Rollout Switch
SEN	—	Sensor
SW	—	Switch
TRAN	—	Transformer

Field Splice
Terminal (Marked)
Terminal (Unmarked)
Splice
Splice (Marked)
Factory Wiring
Field Control Wiring
Field Power Wiring
Accessory or Optional Wiring
To Indicate Common Potential Only, Not to Represent Wiring

NOTES:
1. If any of the original wires furnished are replaced, they must be replaced with type 90 degree C wire or its equivalent.
2. See Trade Prices for thermostat and subbases.
3. Use 75 degree C copper conductors for field installation.
4. For high speed IFM, disconnect RED wire from IGC terminal BM and connect BLK wire from IFM. For medium speed, disconnect RED wire from IGC terminal BM and connect BLU wire from IFM.

TYPICAL WIRING SCHEMATIC—460-3-60 SHOWN





LEGEND

AHA	— Adjustable Heat Anticipator	
BR	— Blower Relay	
C	— Contactor	
CAP	— Capacitor	
COMP	— Compressor Motor	
CR	— Combustion Relay	
CS	— Centrifugal Switch	
EQUIP	— Equipment	
FS	— Fusible Link	
FU	— Fuse	
GND	— Ground	
GV	— Gas Valve	
GVR	— Gas Valve Relay	
HS	— Hall Effect Sensor	
HV	— High Voltage	
I	— Ignitor	
IDM	— Induced-Draft Motor	
IFC	— Indoor-Fan Contactor	
IFM	— Indoor-Fan Motor	
IGC	— Integrated Gas Unit Controller	
L1	— Line	
LS	— Limit Switch	
LS1	— Limit Switch	
MGV	— Main Gas Valve	
NEC	— National Electrical Code	
OFM	— Outdoor-Fan Motor	
QT	— Quadruple Terminal	
RS	— Rollout Switch	
SEN	— Sensor	
SW	— Switch	
TRAN	— Transformer	
		Field Splice
		Terminal (Marked)
		Terminal (Unmarked)
		Splice
		Splice (Marked)
		Factory Wiring
		Field Control Wiring
		Field Power Wiring
		Accessory or Optional Wiring
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NOTES:
1. If any of the original wires furnished are replaced, they must be replaced with type 90 degree C wire or its equivalent.
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3. Use 75 degree C copper conductors for field installation.
4. For high speed IFM, disconnect RED wire from IGC terminal BM and connect BLK wire from IFM. For medium speed, disconnect RED wire from IGC terminal BM and connect BLU wire from IFM.

OPERATING SEQUENCE

Heating – When the thermostat calls for heating, terminal “W” is energized, starting the induced-draft motor. When the hall-effect sensor on the induced-draft motor senses that it has reached the required speed, the burner ignition sequence begins. The indoor (evaporator) fan motor (IFM) is energized 45 seconds after flame is established. When the thermostat is satisfied and “W” is deenergized, the IFM stops after a 45-second time-off delay.

Cooling – When the system thermostat calls for cooling, 24 V is supplied to the “Y” and “G” terminals of the thermostat. This completes the circuit to the contactor coil (C) and indoor (evaporator) fan relay (IFR). The normally open contacts of C close and complete the circuit through compressor motor (COMP) to outdoor (condenser) fan motor (OFM). Both motors start instantly. The set of normally open contacts of IFR close and complete the circuit through IFM. The IFM starts instantly.

On the loss of the thermostat call for cooling, 24 v is removed from both the “Y” and “G” terminals (provided the fan switch is in the “AUTO” position) deenergizing the compressor contactor and opening the contacts supplying power to compressor/OFM. After a 30-second delay, the IFM shuts off. If the thermostat fan selector switch is in the “ON” position, the IFM will run continuously.

NOTE: On units with a Time Guard® II device: once the compressor has started and then stopped, it cannot be restarted again until 5 minutes have elapsed.

GUIDE SPECIFICATIONS

PACKAGED GAS HEATING/ELECTRIC COOLING UNITS CONSTANT VOLUME APPLICATION

HVAC GUIDE SPECIFICATIONS
SIZE RANGE: 2 TO 5 TONS, NOMINAL COOLING
40,000 TO 130,000 BTUH,
NOMINAL HEATING INPUT
BRYANT MODEL NUMBER: 583A

PART 1 — GENERAL

SYSTEM DESCRIPTION

Outdoor rooftop mounted, gas heating/electric cooling unit utilizing a scroll compressor for cooling duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings. Condenser fan/coil section shall have a draw-thru design with vertical discharge for minimum sound levels.

QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240-94 and 270-95.
B. Unit shall be designed in accordance with UL Standard 1995.
C. Unit shall be manufactured in a facility registered to ISO 9001 manufacturing quality standard.
D. Unit shall be UL listed and c-UL certified as a total package for safety requirements.
E. Roof curb shall be designed to conform to NRCA Standards.
F. Insulation and adhesives shall meet NFPA 90A requirements for flame spread and smoke generation.
G. Cabinet insulation shall meet ASHRAE Standard 62P.

DELIVERY, STORAGE AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

PART 2 — PRODUCTS

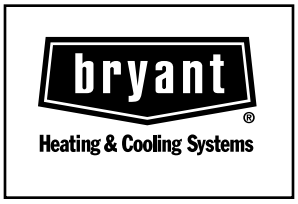
EQUIPMENT

A. General:
Factory-assembled, single-piece, heating and cooling unit. Contained within the enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.
B. Unit Cabinet:
1. Unit Cabinet shall be constructed of phosphated, zinc-coated, pre-painted steel capable of withstanding 500 hours in salt spray.
2. Normal service shall be through a single removable cabinet panel.
3. The unit shall be constructed on a rust proof unit base that has an externally trapped, integrated sloped drain.
4. Evaporator fan compartment top surface shall be insulated with a minimum 1/2-in. thick, flexible fiberglass insulation, coated on the air side and retained by adhesive and mechanical means. The evaporator wall sections will be insulated with a minimum semi-rigid foil-faced board capable of being wiped clean. Aluminum foil-faced fiberglass insulation shall be used in the entire indoor air cavity section.
5. Unit shall have a field-supplied condensate trap.
C. Fans:
1. The evaporator fan shall be 3-speed, direct-drive, as shown on equipment drawings.
2. Fan wheel shall be made from steel, and shall be double-inlet type with forward curved blades with corrosion resistant finish. Fan wheel shall be dynamically balanced.
3. Condenser fan shall be direct drive propeller type with aluminum blades riveted to corrosion resistant steel spiders, be dynamically balanced, and discharge air vertically.
D. Compressor:
1. Fully hermetic compressors with factory-installed vibration isolation.
2. Scroll compressors shall be standard on all units.
E. Coils:
Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed. (Copper/copper and vinyl-coated construction available as option). Tube sheet openings shall be belled to prevent tube wear.
F. Heating Section:
1. Induced-draft combustion type with energy saving direct spark ignition system and redundant main gas valve.
2. Induced-draft motors shall be provided with solid-state hall-effect sensor to ensure adequate airflow for combustion.
3. The heat exchangers shall be constructed of aluminized steel for corrosion resistance.
4. Burners shall be of the in-shot type constructed of aluminum coated steel.
5. All gas piping and electric power shall enter the unit cabinet at a single location.
G. Refrigerant Components:
Refrigerant expansion shall be of the fixed orifice feed type.
H. Filters:
Filter section shall consist of field-installed, throwaway, 1-in. thick fiberglass filters of commercially available sizes.
I. Controls and Safeties:
1. Unit controls shall be complete with a self-contained low voltage control circuit.
2. Compressors shall incorporate a solid-state compressor protector that provides reset capability.
J. Operating Characteristics:
1. Unit shall be capable of starting and running at 125°F ambient outdoor temperature per maximum load criteria of ARI Standard 210.
2. Compressor with standard controls shall be capable of operation down to 40° F ambient outdoor temperature.
3. Units shall be provided with fan time delay to prevent cold air delivery before the heat exchanger warms up.
4. Unit shall be provided with 30-second fan time delay after the thermostat is satisfied.
K. Electrical Requirements:
All unit power wiring shall enter the unit cabinet at a single location.

GUIDE SPECIFICATIONS continued

L. Motors:
1. Compressor motors shall be of the refrigerant-cooled type with line-break thermal and current overload protection.
2. All fan motors shall have permanently lubricated bearings, and inherent, automatic reset, thermal overload protection.
3. Condenser fan motor shall be totally enclosed.

M. Special Features:
1. Grille:
   Wire grille shall be standard on all units. Louvered grille shall be available as a factory-installed option to provide hail guard and vandalism protection.
2. Coil Options:
   Shall include factory-installed optional copper/copper and vinyl-coated refrigerant coils.
3. Economizer:
   a. Economizer controls capable of providing free cooling using outside air.
   b. Equipped with low leakage dampers not to exceed 3% leakage, at 1.0 in. wg pressure differential.
   c. Spring return motor shuts off outdoor damper on power failure.
4. Flat Roof Curb:
   Curbs shall have seal strip and a wood nailer for flashing and shall be installed per manufacturer's instructions.
5. Manual Outdoor Air Damper:
   Package shall consist of damper, birdscreen, and rainhood which can be preset to admit outdoor air for year-round ventilation.
6. Thermostat:
   To provide for one-stage heating and cooling in addition manual or automatic changeover and indoor fan control.
7. Natural-to-Propane Conversion Kit:
   Shall be complete with all required hardware to convert to liquid propane (LP) operation.
8. Low Ambient Package:
   Shall consist of a solid-state control and condenser coil temperature sensor for controlling condenser-fan motor operation, which shall allow unit to operate down to 0° F outdoor ambient temperature.
9. Filter Rack Kit:
   Shall provide filter mounting for downflow or horizontal applications.
10. Controls Upgrade Kit:
    Shall provide high and low pressure safety protection.
11. Square-To-Round Duct Transitions (024–048):
    Shall have the ability to convert the supply and return openings from rectangular to round.
12. Compressor Protection:
    Solid-state control shall protect compressor by preventing "short cycling."
13. Crankcase Heater:
    Shall provide anti-floodback protection for low-load cooling applications.
14. High Altitude Kit:
    Shall consist of natural gas orifices to compensate for gas heat operation at 2001 to 6000 ft above sea level.
15. Low NO_x:
    Shall provide NO_x reduction to values below 40 nanograms/joule to meet California emission requirements.
16. Compressor Hard Start Kit (single phase units only):
    Shall provide additional starting torque for single-phase compressors.



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE
WITH INSTALLATION INSTRUCTIONS

Form No. PDS 583A.24.4

Cancels: PDS 583A.24.3

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